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Poster Abstract

TOMATO PLANTS TRANSGENIC FOR AN *ARABIDOPSIS THALIANA* CYSTEIN PROTEINASE INHIBITOR (*ATCYS*) IMPAIR THE LIFE CYCLE OF *HELICOVERPA ARMIGERA HÜB*

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Atcys tomato (*Lycopersicon esculentum* Mill.) transgenic plants, expressing a cystein proteinase inhibition level double than the untransformed control (Speranza *et al*. in press), were used for *in vivo* assays with *H. armigera* larvae. This insect pest, extremely polyphagous, has recently caused severe damages to the outdoor tomato crop due to the dropping of infested young fruits and to fruit rotting because of the larval galleries.

Plants of the cv. Riogrande (RIG) and of the corresponding *Atcys* homozygous transgenic line (BG-106) were grown in greenhouse and leaves utilized for feeding *H. armigera* larvae, reared for four days with artificial diet. The recorded data were larval weight (every two days until the cocoon stage), cocoon sex and morphometric traits, number of adults emerged from the cocoon, number of layed and hatched eggs. The mean weight was generally higher when larvae were fed with BG-106 leaves. By subdividing in three periods the larval life, no difference in mortality was observed between larvae reared with control (RIG) and with BG-106 leaves. The percentage of adults emerged from the cocoon was 81% and 76% for the control and BG-106 respectively. The sex ratio (males/females) was in favour of the female sex both for the RIG (0.87) and BG-106 (0.73) cocoons. On average, the fertility (number of layed eggs) of the BG-106 fed females was 33% lower than the control. By considering the percentage of hatched eggs (emerged larvae), the value obtained was 6.8% for BG-106 against 11% for RIG.

According to these data, in *Atcys* transgenic tomato (BG-106), a level of cystein proteinase inhibition double than the untransformed control, is sufficient to negatively influence the *H. armigera* biological cycle, even if the weight of the larvae fed with the BG-106 leaves is on average higher than the control (RIG). The last datum is in agreement with similar experiments reported in literature where the effect of proteinase inhibitors is tested in different host-pest systems.